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Indian Standard

SPECIFICATION FOR LOCOMOTIVE GREASES

(Third Revision)

UDC 621·892·094 : 625·282

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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September 1986

Indian Standard

SPECIFICATION FOR LOCOMOTIVE GREASES

(Third Revision)

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Indian Standard

SPECIFICATION FOR LOCOMOTIVE GREASES

(Third Revision)

0. FOREWORD

0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 3 March 1986, after the draft finalized by the Lubricants and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first published in 1955, and subsequently revised in 1967 and 1974. In the second revision IS : 721-1955* was also merged with this specification with the result that the title of the specification was changed and IS : 721-1955* was withdrawn.

0.3 The present revision has been prepared as a result of a review of the standard by the Committee in the light of current requirements and advancement in the field of lubrication technology in the country. Based on the comments from Railways the main user of this type of grease the composition of the mineral oil used has been changed. The characteristics of the mineral oil extracted from grease as laid down in Table 1 of the present standard were found inadequate to define the base oil used for the manufacture of hard loco grease. Accordingly some additional characteristics have been incorporated in Table 1 so that the mineral oil used for the manufacture of the grease meets the minimum requirements to ensure a satisfactory quality of the finished grease.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Specification for grease, S. soft, loco.

†Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and tests for greases, for locomotive journal, rod lubrication and for locomotive lubrication, other than anti-friction bearings.

2. GRADES

2.1 There shall be three grades of the material namely Grade 1, Grade 2 and Grade 3.

3. REQUIREMENTS

3.1 General

3.1.1 The material shall be uniform in consistency and free from objectionable odour and other impurities or deleterious materials. It shall be free from rosin, rosin oil, rosinates, tar oil, grit and fillers of any description.

3.1.2 In case of Grade 1 and Grade 2 greases the material shall be such that it can be cut into blocks of desired size and shape without having surface cracks or distortion. In case of Grade 3, the material shall be of such a texture that grease guns, when filled with the material, may be readily worked after storage of 6 hours at 0°C. The grease-guns shall have 6-mm pipe thread (for details of dimensions, *see* IS : 554-1975*). Where pressure-tight joints are made on the thread, grease nipples shall have an orifice diameter of 8 mm.

3.2 Composition — Greases to this specification shall be prepared mainly from soda soap and a suitable blend of mineral oils.

3.3 The material shall also comply with the requirements given in Table 1 when tested according to the methods given in 'P' series of IS : 1448†. Reference to the relevant methods of tests is given in col 6 of Table 1.

4. KEEPING PROPERTIES

4.1 The material when stored in original sealed containers under normal temperature conditions under shade shall retain the properties described under **3** for a period of not less than one year from the date of delivery.

5. PACKING AND MARKING

5.1 Packing — The material shall be packed as agreed to between the purchaser and the supplier.

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*Dimensions of pipe threads where pressure tight joints are required on the threads (*second revision*).

†Methods of test for petroleum and its products.

TABLE 1 REQUIREMENTS FOR LOCOMOTIVE GREASES

(*Clause* 3.3)

SL No.	CHARACTERISTIC	REQUIREMENT FOR			METHOD OF TEST, REF TO (P :) OF IS : 1448*
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Sulphated ash, percent by mass, *Max*	13·0	11·5	6·0	P : 4
ii)	Evaporation loss, percent by mass, *Max*	1·0	1·0	1·0	P : 61
iii)	Consistency of unworked grease using penetrometer cone but with 300 g load at 37·8°C	30 to 45	46 to 60	—	P : 60
iv)	Consistency of the worked grease at 25·0 ± 0·5°C (60 double strokes)	—	—	200 to 250	P : 60
v)	Free organic acidity (as oleic acid), percent by mass, *Max*	0·30	0·30	0·30	P : 53
vi)	Free alkalinity (as sodium hydroxide) (NaOH), percent by mass, *Max*	0·50	0·50	0·50	P : 53
vii)	Drop point, °C, *Min*	170	170	150	P : 52
viii)	Heat stability, percent loss in mass, *Max*	—	—	5·0	P : 89
ix)	Copper strip corrosion at 100°C for 24 h	Negative	Negative	Negative	P : 51
x)	Mineral oil extracted from grease:				P : 59
	a) Kinematic viscosity, cSt at 100°C	25 to 40	25 to 40	15 to 20	P : 25
	b) Flash point, Cleveland (open) Cup, °C, *Min*	250	250	200	P : 69
	c) Viscosity index, *Min*	← 55 →			P : 56
	d) Ash, percent by mass, *Max*	← 0·02 →			P : 2 (Method A)
	e) Carbon residue (Ramsbottom), percent by mass, *Max*	← 1·5 →			P : 8
	f) Saponification value, *Max*	← 1·0 →			P : 55
xi)	Soap content, percent by mass	43 to 50	35 to 42	—	P : †

*Methods of test for petroleum and its products.

†Under preparation. Till such time it is published ASTMD 128-64(77) may be followed.

5.2 Marking — The containers shall be marked with the name and grade of the material; net mass in the container; name of the manufacturer and recognized trade-mark, if any; and batch number or code number.

5.2.1 The containers may also be marked with ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS : 1447-1966*.

6.2 Number of Tests and Criteria for Conformity

6.2.1 Individual containers selected according to IS : 1447-1966* shall be opened and examined for the general requirements given in **3.1**. Tests for consistency shall be carried out on all the individual samples and test for corrosion shall be conducted on three of the individual samples. No failure shall be reported if the lot is to be accepted under this clause.

6.2.2 Tests for all the remaining characteristics shall be made on the composite sample and all the test results shall satisfy the corresponding requirements for acceptance of the lot.

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*Methods of sampling of petroleum and its products.

(*Continued from page* 2)

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Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2